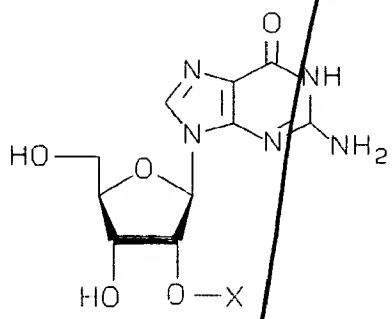
What is claimed is:

1. A compound having the structure:



wherein X is $R_1-(R_2)_n$;

R_1 is C_3-C_{20} alkyl, C_4-C_{20} alkenyl or C_2-C_{20} alkynyl;

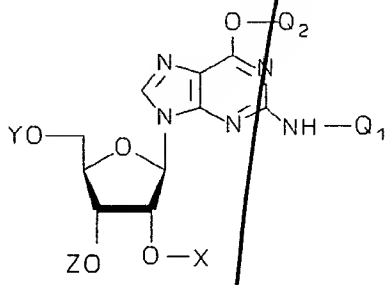
R_2 is halogen, hydroxyl, thiol, keto, carboxyl, nitro, nitroso, nitrile, trifluoromethyl, trifluoromethoxy, O-alkyl, S-alkyl, NH-alkyl, N-dialkyl, O-aryl, S-aryl, NH-aryl, O-aralkyl, S-aralkyl, NH-aralkyl, amino, N-phthalimido, imidazole, azido, hydrazino, hydroxylamino, isocyanato, sulfoxide, sulfone, sulfide, disulfide, silyl, aryl, heterocycle, carbocycle, intercalator, reporter molecule, conjugate, polyamine, polyamide, polyalkylene glycol, polyether, a group that enhances the pharmacodynamic properties of oligonucleotides, or a group that enhances the pharmacokinetic properties of oligonucleotides; and

n is an integer from 0 to about 6.

2. The compound of claim 1 wherein R_1 is C_4-C_{20} alkyl.

3. The compound of claim 1 wherein R_1 is C_5-C_{20} alkyl.

4. A compound having the structure:



wherein X is R_1-$(R_2)_n$;

R_1 is C_3-C_{20} alkyl;

R_2 is NH_2, imidazole, or N-phthalimido;

Y is a hydroxyl blocking group;

Z is phosphate or an activated phosphate group;

Q_1 and Q_2 independently are H or a guanosine blocking group; and

n is an integer from 0 to about 6.

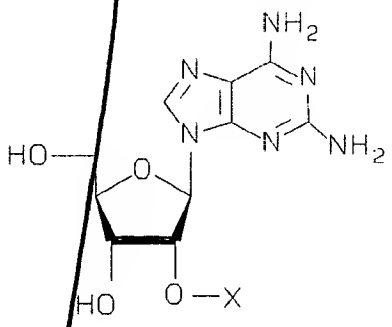
5. The compound of claim 4 wherein:

Y is trityl, methoxytrityl, dimethoxytrityl or trimethoxytrityl.

6. The compound of claim 4 wherein:

Z is ß-cyanoethyl-N,N-isopropylphosphoramidate.

7. A compound having the structure:



wherein X is R_1-$(R_2)_n$;

R_1 is C_3-C_{20} alkyl, C_4-C_{20} alkenyl or C_2-C_{20} alkynyl;

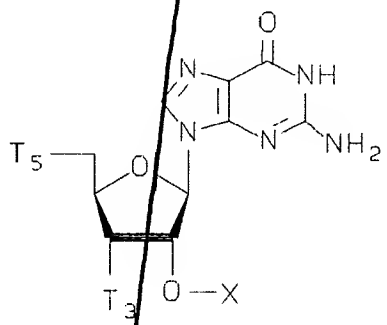
R_2 is halogen, hydroxyl, thiol, keto, carboxyl,

nitro, nitroso, nitrile, trifluoromethyl, trifluoromethoxy, O-alkyl, S-alkyl, NH-alkyl, N-dialkyl, O-aryl, S-aryl, NH-aryl, O-aralkyl, S-aralkyl, NH-aralkyl, amino, imidazole, N-phthalimido, azido, hydrazino, hydroxylamino, isocyanato, sulfoxide, sulfone, sulfide, disulfide, silyl, aryl, heterocycle, carbocycle, intercalator, reporter molecule, conjugate, polyamine, polyamide, polyalkylene glycol, polyether, a group that enhances the pharmacodynamic properties of oligonucleotides, or a group that enhances the pharmacokinetic properties of oligonucleotides; and

n is an integer from 0 to about 6.

8. The compound 2'-*O*-propylguanosine, 2'-*O*-pentylguanosine, 2'-*O*-nonylguanosine, 2'-*O*-octadecylguanosine, 2'-*O*-(N-phthalimido)-pentylguanosine, or 2'-*O*-(imidazol-1-yl)butylguanosine.

9. An oligomer comprising at least one subunit having the structure:



wherein X is R_1-$(R_2)_n$;

R_1 is C_3-C_{20} alkyl, C_4-C_{20} alkenyl, or C_2-C_{20} alkynyl;

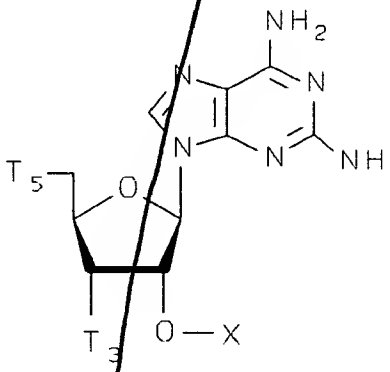
R_2 is halogen, hydroxyl, thiol, keto, carboxyl, nitro, nitroso, nitrile, trifluoromethyl, trifluoromethoxy, O-alkyl, S-alkyl, NH-alkyl, N-dialkyl, O-aryl, S-aryl, NH-aryl, O-aralkyl, S-aralkyl, NH-aralkyl, amino, imidazole, N-phthalimido, azido, hydrazino, hydroxylamino, isocyanato, sulfoxide, sulfone, sulfide, disulfide, silyl, aryl, heterocycle, carbocycle, intercalator, reporter molecule,

conjugate, polyamine, polyamide, polyalkylene glycol, polyether, a group that enhances the pharmacodynamic properties of oligonucleotides, or a group that enhances the pharmacokinetic properties of oligonucleotides;

T_3 and T_5 independently are OH or a further subunit of said oligomer that is joined to said structure; and

n is an integer from 0 to about 6.

10. An oligomer comprising at least one subunit having the structure:



wherein X is R_1-$(R_2)_n$;

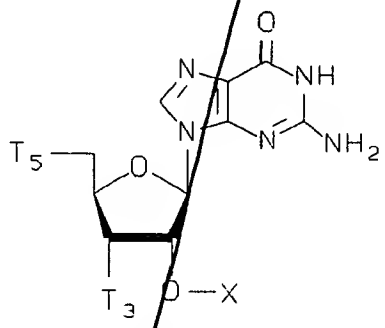
R_1 is C_1-C_{20} alkyl, C_2-C_{20} alkenyl, or C_2-C_{20} alkynyl;

R_2 is halogen, hydroxyl, thiol, keto, carboxyl, nitro, nitroso, nitrile, trifluoromethyl, trifluoromethoxy, O-alkyl, S-alkyl, NH-alkyl, N-dialkyl, O-aryl, S-aryl, NH-aryl, O-aralkyl, S-aralkyl, NH-aralkyl, amino, imidazole, N-phthalimido, azido, hydrazino, hydroxylamino, isocyanato, sulfoxide, sulfone, sulfide, disulfide, silyl, aryl, heterocycle, carbocycle, intercalator, reporter molecule, conjugate, polyamine, polyamide, polyalkylene glycol, polyether, a group that enhances the pharmacodynamic properties of oligonucleotides, or a group that enhances the pharmacokinetic properties of oligonucleotides;

T_3 and T_5 independently are OH or a further subunit of said oligomer that is joined to said structure; and

n is an integer from 0 to about 6.

11. A method of modulating the synthesis of a protein comprising specifically hybridizing with mRNA coding for said protein an oligomer comprising at least one subunit having the structure:



wherein X is R_1-$(R_2)_n$;

R_1 is C_3-C_{20} alkyl, C_4-C_{20} alkenyl, or C_2-C_{20} alkynyl;

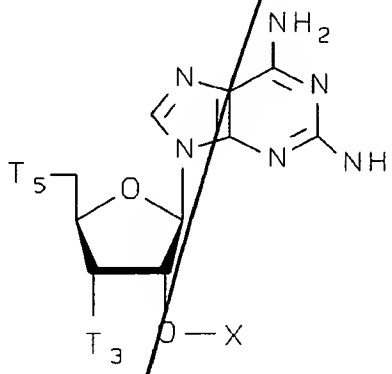
R_2 is halogen, hydroxyl, thiol, keto, carboxyl, nitro, nitroso, nitrile, trifluoromethyl, trifluoromethoxy, O-alkyl, S-alkyl, NH-alkyl, N-dialkyl, O-aryl, S-aryl, NH-aryl, O-aralkyl, S-aralkyl, NH-aralkyl, amino, imidazole, N-phthalimido, azido, hydrazino, hydroxylamino, isocyanato, sulfoxide, sulfone, sulfide, disulfide, silyl, aryl, heterocycle, carbocycle, intercalator, reporter molecule, conjugate, polyamine, polyamide, polyalkylene glycol, polyether, a group that enhances the pharmacodynamic properties of oligonucleotides, and a group that enhances the pharmacokinetic properties of oligonucleotides;

T_3 and T_5 independently are OH or a further nucleotide or nucleoside of said oligonucleotide or oligonucleoside that is joined to said structure; and

n is an integer from 0 to about 6.

12. The method of claim 11 wherein said oligonucleotide is in a pharmaceutically acceptable carrier.

13. A method of modulating the synthesis of a protein comprising specifically hybridizing with mRNA coding for said protein an oligomer comprising at least one subunit having the structure:



wherein X is R_1-$(R_2)_n$;

R_1 is C_1-C_{20} alkyl, C_2-C_{20} alkenyl, or C_2-C_{20} alkynyl;

R_2 is halogen, hydroxyl, thiol, keto, carboxyl, nitro, nitroso, nitrile, trifluoromethyl, trifluoromethoxy, O-alkyl, S-alkyl, NH-alkyl, N-dialkyl, O-aryl, S-aryl, NH-aryl, O-aralkyl, S-aralkyl, NH-aralkyl, amino, imidazole, N-phthalimido, azido, hydrazino, hydroxylamino, isocyanato, sulfoxide, sulfone, sulfide, disulfide, silyl, aryl, heterocycle, carbocycle, intercalator, reporter molecule, conjugate, polyamine, polyamide, polyalkylene glycol, polyether, a group that enhances the pharmacodynamic properties of oligonucleotides, and a group that enhances the pharmacokinetic properties of oligonucleotides;

T_3 and T_5 independently are OH or a further nucleotide or nucleoside of said oligonucleotide or oligonucleoside that is joined to said structure; and

n is an integer from 0 to about 6.

14. The method of claim 15 wherein said oligonucleotide is in a pharmaceutically acceptable carrier.